

Twelfth International Conference on the Remediation
of Chlorinated and Recalcitrant Compounds

CALL FOR ABSTRACTS

May 22-26, 2022 | Palm Springs, California

Abstracts Due August 31, 2021

battelle.org/chlorcon | [#Chlorinated2022](https://twitter.com/Chlorinated2022)

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Battelle's Chlorinated Conference Returns!

As the world emerges from the pandemic, the 2022 conference will be an unmatched opportunity for the environmental remediation community to again gather, learn, and network with the best-of-the-best thinkers in science, engineering, consulting, and regulation from universities, state-and-federal government agencies, R&D organizations, and manufacturing firms from around the world.

Recognized as the signature forum for the environmental remediation industry, topics will include innovations and technologies to address chlorinated and recalcitrant compounds in the environment. Battelle's Chlorinated Conference is the premier gathering of environmental professionals researching and applying innovative technologies and approaches for characterization, monitoring, cleanup, and management of complex sites contaminated with the most challenging classes of chemicals.

The 2018 Chlorinated Conference was the largest to date and was attended by more than 1,800 environmental professionals from 30 countries. The largest technical program in Chlorinated Conference history was conducted with more than 1,000 platform talks and posters presented in 80 breakout sessions and 7 panel discussions. Battelle was also pleased to host more than 100 exhibitors over the length of the program.

The 2022 Conference technical program will be conducted Monday-Thursday, May 23-26. Short Courses will be conducted on Sunday, May 22, and Tuesday afternoon, May 24. The breadth and depth of the technical program, combined with daily opportunities to meet and engage with other environmental professionals, will make participation in the Conference a valuable investment for you and your organization.

Important Dates

August 9, 2021: General exhibit sales open

August 31, 2021: Abstracts due

September 27, 2021: Short Course proposals due

September 27, 2021: Learning Lab proposals due

October 29, 2021: Student papers due

The ***Twelfth International Conference on Remediation of Chlorinated and Recalcitrant Compounds*** will be held May 22-26, 2022, in Palm Springs, California.

The Preliminary Program brochure will be available at www.battelle.org/chlorcon in December 2021.

Conference Sponsors

Battelle gratefully acknowledges the financial commitment and support of the following organizations. Information about Conference Sponsorship can be found on the Conference website on the **Sponsor & Exhibitors** page.

The Conference is organized and presented by Battelle.

Battelle's environmental engineers, scientists and professionals offer focused expertise to government and industrial clients in the U.S. and abroad. Combining sound science and engineering solutions with creative management strategies, Battelle works with clients to develop innovative, sustainable and cost-effective solutions to complex problems in site characterization, assessment, monitoring, remediation, restoration, and management.

Every day, the people of Battelle apply science and technology to solving what matters most. At major technology centers and national laboratories around the world, Battelle conducts research and development, designs and manufactures products, and delivers critical services for government and commercial customers. Headquartered in Columbus, Ohio, since its founding in 1929, Battelle serves the national security, health and life sciences, and energy and environmental industries.

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Technical Program Scope

Examples of anticipated presentation topics are listed below; use the numerical codes to reference topics you believe are the best match for your proposed presentation. **This is neither a final nor comprehensive list. Abstracts are welcome on all relevant topics.** Presentations will address the full range of technologies that can be used to remediate sites contaminated by chlorinated and other recalcitrant compounds. Risk, regulatory, and site management issues associated with these technologies will be discussed. The program will emphasize field applications, case studies, and rational site-closure approaches, but submissions on fundamental research and laboratory, pilot, and modeling studies are encouraged.

Remediation Technology Innovations

- 1a. Abiotic and In Situ Biogeochemical Processes: Applications and Lessons Learned
- 1b. Advances in Amendment Formulations
- 1c. ZVI: 25 Years of Groundwater Remediation Applications
- 1d. Permeable Reactive Barriers: Best Practices and Lessons Learned
- 1e. Combined Remedies and Treatment Trains
- 1f. Electro-Enhanced Technologies
- 1g. Emerging Remediation Technologies
- 1h. Thermally Enhanced In Situ Degradation Processes at Sub-Boiling Temperatures
- 1i. Horizontal Wells: Applications and Lessons Learned in Site Characterization and Remediation
- 1j. In Situ Chemical Oxidation: Optimized Design Approaches and Lessons Learned
- 1k. Injectable Activated Carbon Amendments: Lessons Learned and Best Practices
- 1l. Innovations in ZVI Amendment Formulations and Applications
- 1m. Innovative and Optimized Amendment Delivery and Monitoring Methods
- 1n. In Situ Technologies: Lessons Learned
- 1o. Monitored Natural Attenuation: Innovative Monitoring Approaches/Lines of Evidence and Lessons Learned
- 1p. Advanced Oxidation Processes and Other Ex Situ Remediation Innovations
- 1q. Advanced and Synthetic Biological Treatment Applications
- 1r. Electron Donors: Innovations for Biodegradation
- 1s. Electrical Resistance Heating: Best Practices and Lessons Learned
- 1t. Thermal Conductive Heating: Best Practices and Lessons Learned

Assessing Remediation Effectiveness

- 2a. Remedial Design/Optimization: Applications of Mass Flux and Mass Discharge
- 2b. Remedy Implementation: Assessing Performance and Costs
- 2c. In Situ Activated Carbon-Based Amendments: Assessing Effectiveness and Performance
- 2d. Multi-Site Portfolios: Optimizing Data Management
- 2e. Compound-Specific Isotope Analysis: Case Studies in Evaluating Remedy Performance

- 2f. Site Closure: Models Used to Estimate Cleanup Timeframes
- 2g. Data Analytics: Use of Advanced Decision Analysis Tools, Including AI and Machine Learning for Improved Analysis, Optimization and Decision Making
- 2h. Optimizing Remedial Systems
- 2i. Setting Cleanup Goal End Points: When Are We Done?

Green and Sustainable Remediation

- 3a. GSR Best Practices and Nature-Based Remediation Case Studies
- 3b. GSR Metrics and Sustainable Remediation Assessment Tools
- 3c. Climate Resilience and Site Remediation
- 3d. Aligning Remediation Goals with Environmental, Social, and Governance (ESG) Considerations

Addressing Challenging Site Conditions

- 4a. Adaptive Site Management: Lessons Learned for Site Characterization and Remedy Implementation
- 4b. Landfill Assessment and Remediation
- 4c. Landfill Post-Closure Redevelopment
- 4d. Large, Dilute and Commingled Plume Case Studies
- 4e. DNAPL Source Zone Remediation: Lessons Learned
- 4f. Low-Permeability Zone Challenges, Permeability Enhancements, and Case Studies
- 4g. Evaluating Surface Water/Groundwater Interactions: Innovative Monitoring Approaches and Modeling Applications
- 4h. TSCA-Regulated PCB Assessment and Remediation

Fractured Rock and Complex Geology

- 5a. Technical Impracticability: Challenges and Considerations for Evaluation of Fractured Rock Sites
- 5b. Depositional Environments and Stratigraphic Considerations for Remediation
- 5c. Remediation Approaches in Fractured Rock and Karst Aquifers
- 5d. Process-Based Conceptual Site Models (CSMs) for Informing Remediation
- 5e. Advances in the Application of Geologic Interpretation to Remediation

Petroleum and Heavy Hydrocarbon Site Strategies

- 6a. Heavy Hydrocarbons: Characterization and Remediation
- 6b. In Situ Remediation of Petroleum Hydrocarbons
- 6c. LNAPL Recovery/Remediation Technology Transitions
- 6d. Natural Source Zone Depletion
- 6e. Surfactant-Enhanced Remediation
- 6f. TPH Risk Assessment and Metabolites
- 6g. LNAPL Sites: Understanding and Managing Risks

Per- and Polyfluorinated Alkyl Substances (PFAS)

- 7a. Advances in the Analysis of Non-Target Per- and Polyfluorinated Alkyl Substances (PFAS)
- 7b. Ex Situ PFAS Treatment Approaches
- 7c. In Situ PFAS Treatment Approaches
- 7d. PFAS and Bugs: The Search Continues
- 7e. PFAS Fate and Transport
- 7f. PFAS Program Management in a Rapidly Changing Regulatory Environment
- 7g. PFAS Human Health and Ecological Risk Assessment and Toxicity
- 7h. PFAS Site Characterization
- 7i. PFAS Source and Forensic Considerations
- 7j. PFAS: Drinking Water Treatment Case Studies
- 7k. PFAS: Groundwater Treatment Case Studies
- 7l. Managing PFAS at Publicly-Owned Treatment Works (POTWs)

Metals

- 8a. Managing Chromium-Contaminated Sites
- 8b. Mining and Uranium Site Restoration
- 8c. Precipitation and Stabilization of Metals

Vapor Intrusion

- 9a. Advances in Vapor Intrusion Investigations
- 9b. Vapor Intrusion Mitigation and Effectiveness
- 9c. Vapor Intrusion Preferential Pathways
- 9d. Vapor Intrusion Risk Assessment and Site Management
- 9e. Post-Construction Monitoring of Vapor Mitigation Systems

Characterization, Fate and Transport

- 10a. Advanced Investigation Tools and Techniques
- 10b. Conceptual Site Models: Improvements in Development and Application
- 10c. Groundwater Modeling Advancements
- 10d. High-Resolution Site Characterization (HRSC)
- 10e. Improvements in Site Data Collection, Data Management, and Data Visualization
- 10f. Incremental Sampling Methodology for Characterization: Case Studies and Lessons Learned

Advanced Diagnostic Tools

- 11a. Environmental Forensics: Site Characterization and Source Determinations
- 11b. Remote Sensing, Drones, and Other Unmanned Systems for Remote Monitoring and Site Assessments
- 11c. Using Omic Approaches and Advanced Molecular Tools to Optimize Site Remediation

Technology Transfer and Stakeholder Communications

- 12a. Expedite Site Closure: Innovative Strategies and Approaches
- 12b. Practice of Risk Communication and Stakeholder Engagement

International Environmental Remediation Markets

- 13a. International Remedy Applications: Regulatory and Logistical Challenges of Remediation Abroad

Emerging Contaminants

- 14a. 1,4-Dioxane Remediation Challenges
- 14b. Advances in 1,4-Dioxane Biological Treatment Technologies
- 14c. Explosives, Perchlorate
- 14d. Microplastics
- 14e. Pharmaceuticals and Viruses
- 14f. Other Emerging Contaminants

Program Committee

Conference Chairs

Michael Meyer, PMP, RG, LEG, LHG (Battelle)

Carolyn Scala, PE (Battelle)

Steering Committee

Wendy Condit, PE (Battelle)

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Paul Randall (U.S. EPA)

Mike Riggle, PG (USACE)

Kent Sorenson, Ph.D., PE (Allonia)

Rick Wice, PG (Battelle)

Abstract Preparation and Submittal

Abstracts are due August 31, 2021.

The program will be developed through an intense, multilevel review by the Program Committee and the session chairs.

To ensure full opportunity for placement in the program, abstracts should be submitted by August 31, 2021. Because more than 1,200 submissions are expected, abstracts must be well written, clearly and concisely outlining the material being proposed for presentation. Abstracts with a pronounced commercial or marketing tone will not be accepted.

Format/Content/Required Subheadings. Abstracts must be in English and cannot exceed one 8.5"x11" standard-size page. Format requirements and an example abstract are available on the Conference website under "**Abstract Specifications and Submittal.**"

Abstracts must be organized under the following required subheadings—**Background/Objectives, Approach/Activities, and Results/Lessons Learned.** Abstracts must convey the information reviewers will need to assess the scope of the work and the data likely to be available at the time of the presentation, determine its relevance, compare it with other proposed presentations, and, if accepted for the program, assign it to an appropriate platform or poster session.

Submittal. The link to the online abstract submission form can be found on the Conference website on the **Abstract Specifications and Submittal** page. Abstracts may be submitted only online through the link provided; emailed submissions will not be accepted or reviewed. The online submittal form will require complete contact information (postal mailing address, phone number, and email) for the corresponding/presenting author and for all co-authors. Session placement suggestions and format preference (platform or poster) may be entered on the submittal form. The corresponding/presenting author's preferences will be considered by the reviewers but cannot be guaranteed. Final decisions on placement and format are made by the program committee and will be based on best overall design of the Conference program.

Notification of Acceptance/Placement. In December 2021, the corresponding/presenting author of each abstract will be notified by email of the placement decision. If the abstract was accepted, this email will state the session and format (platform or poster) to which it was assigned and provide information on preparing the presentation and submitting an updated abstract shortly before the Conference.

Inquiries. Questions about abstract preparation and submittal should be addressed to chlorcon@battelle.org.

Learning Lab Proposals

Learning Lab Proposals are due September 27, 2021.

Generate exposure, demonstrate use, or solicit feedback for a technology, software, prototype, or tool in a 25-minute, hands-on demonstration, or user experience, in the Learning Lab, located in the Exhibit Hall. If selected, there is no additional fee to participate. Selection decisions will be based on the best overall design of the Conference program.

The link to the online **Learning Lab Proposal Form** can be found on the Conference website on the **Learning Lab** page.

Learning Lab Sponsors. We appreciate the participation of Burns & McDonnell and Ramboll, whose contributions will be applied toward the overall cost of the Learning Lab experience.



Short Course Proposals

Proposals are due September 27, 2021.

Courses on topics within the general scope of the Conference will be offered on Sunday, May 22, and on the afternoon of Tuesday, May 24.

Proposals will be evaluated, and instructors will be notified of the results by November 1, 2021. If your course is selected, you will receive information about scheduling and how course registrations will be handled. Course descriptions will be posted on the website in December 2021.

The link to the online **Short Course Proposal Form** can be found on the Conference website on the **Short Courses** page.

Inquiries. Questions about courses should be addressed to chlorcon@battelle.org.

Student Participation

Student Papers are due October 29, 2021.

Students are encouraged to attend the Conference and will find participation valuable to their career development. In addition to the technical information gained by attending presentations and visiting exhibits, students can meet and talk with environmental professionals representing a wide range of work experience and employers.

Student Paper Competition. Student papers may be submitted on any topic relevant to the overall technical scope of the Conference seen on pages 4-5.

The primary author of each winning paper will receive a complimentary, nontransferable registration and a cash award, which will provide substantial assistance with travel and hotel costs. Competition participants will be informed of the results in December 2021.

Students who wish to present their work at the Conference (if they win the competition or not) should submit an abstract through the online system by the August 31, 2021, abstract due date. They may then submit their competition papers by the October 29 student paper due date.

Detailed specifications and submittal information will be available on the Conference website on the **Student Participation** page by June 30, 2021.

Reduced Registration Rate. The student registration rate provides full access to technical sessions, exhibits, and meals. Full-time students are eligible; documentation of current enrollment is required.

Student Events. In addition to the Student Paper Competition, special events to enhance students' and young professionals' career development and networking opportunities will be announced in the Preliminary Program.

Student Event Sponsor. We appreciate the participation of Haley & Aldrich whose contribution will be applied toward the cost of the student events.



Exhibits

Exhibits open for general sale August 9, 2021.

All Exhibits will be displayed in the Palm Springs Convention Center (277 N. Avenida Caballeros, Palm Springs, CA 92262).

Organizations that provide environmental assessment, remediation, and management services and products are invited to exhibit. Exhibitors will have the opportunity to present information to a focused audience of approximately 1,800 people who acquire and use environmental management products and services at industrial and government sites around the world. Daily continental breakfasts, morning and afternoon beverage breaks, evening receptions, poster displays and presentations, as well as the Internet Cafe and Learning Lab, will be featured in the Exhibit Hall.

Booth Selection and Fees. Conference level and Learning Lab Sponsors receive priority booth selection and will select space in July 2021. Exhibits will open for general sale August 9, 2021. Links to the Exhibit Hall floor plan, Exhibitor terms and conditions, and online booth application form will be posted on the Conference website on the **Sponsors & Exhibitors** page by June 30, 2021. Booths can be reserved only online, and space will be assigned on a first-come/first-served basis, according to receipt of completed application and payment.

Booth Size	Paid by Nov. 15, 2021	Paid after Nov. 15, 2021
Gov./Non-Profit* 10'x10'	\$1,000	\$1,300
Standard Inline 10'x10'	\$3,695	\$3,995
Standard Inline 10'x20' (Endcaps not permitted)	\$6,995	\$7,295
20'x20' Island	\$12,995	\$13,295

*LIMITED QUANTITY AVAILABLE at the Govt./Non-Profit Rate (5 booth spaces; first-come, first-served)
Only one 10'x10' booth per gov't./non-profit organization can be purchased at this rate. Additional booths will be charged the standard inline 10'x10' rate and premium fees as seen below apply to applicable booth spaces as indicated on the Exhibit Hall floor plan. Booth space will not be held or reserved specifically for this rate and booth space may sell out at the regular rates prior to 5 spaces being purchased at this rate.

Premium/Corner Booths. Booths located in premium (high traffic) areas and corner booths are subject to the additional fees: (1) Corner=\$100, (2) Premium=\$200, (3) Premium + Corner=\$300.

Internet Cafe Sponsors. We appreciate the participation of Clean Vapor, Integral Consulting, Inc., and Kane Environmental, Inc., whose contributions will be applied toward the cost of the Internet Cafe.



cleanvapor.com



integral-corp.com



kane-environmental.com

Closing Reception Sponsor. We appreciate the participation of Ivey International, Inc. whose contribution will be applied toward the Closing Reception.



iveyinternational.com

Inquiries. Please contact Susie Warner at 301-670-4990 or send an email to chlorinated2022@scgcorp.com.

Conference Registration

The link to online registration will be available on the Conference website on the **Registration** page by June 30, 2021. Short course registration will be added to the website in December 2021.

The following technical program registration fees cover admission to all platform and poster sessions, exhibits, group lunches, receptions, and daily continental breakfasts and refreshment breaks.

Registration Type	Paid by Feb. 21, 2022	Paid after Feb. 21, 2022
Industry	\$955	\$1025
Gov./Univ.*	\$730	\$830
Student**	\$440	\$490

*The university fee applies to full-time faculty and other teaching and research staff, including post-doctoral students. ** The student fee is reserved for full-time students through Ph.D. candidates whose fees will be paid by their universities or who will not be reimbursed for out-of-pocket payment. Documentation of current enrollment is required.

Booth Staff Registration. Booth staff will be registered by their exhibit managers.

Non-U.S. Registrants. For registrants outside the United States, it is recommended that you wait until your visa application has been approved prior to registering. Refunds will not be granted after the “no refund” date in the event your visa application is denied.

Registration Terms & Conditions. The full list of registration terms and conditions can be found on the Conference website on the **Registration** page. Registration terms and conditions are subject to change without notice and are applicable to all levels of registration, including booth staff and Sponsor/Exhibitor waived and discounted registrants. No one under 18 years of age will be admitted to any Conference event unless registered as a student; valid student ID required at check-in.

Presenter Registration Requirement. Financial assistance is not available to support registration or other costs of attending the Conference. All presenting authors (platform and poster), session chairs, and panel participants are expected to register and pay the standard technical-program registration fees. Registration fees are the major source of funding for the Conference and a significant percentage of registrants will make presentations or chair sessions.

Payment. Payment is required to confirm registration and registration discounts apply only to payments received by the specified dates. Checks will be accepted for registrations made through February 21, 2022. Beginning February 22, 2022, payment can be made only by major credit card. Purchase orders will not be accepted at any time. Fees are not transferable to other Battelle Conferences. Conference information meant for attendees only (e.g., links to mobile apps, abstracts, and registration lists) will only be sent to individuals that have paid in full.

Cancellations & Refunds. Registration cancellations and refund requests must be received in writing on or before the “cancellation requested date” below to qualify.

By registering for the Conference, you agree to the following registration cancellation refund policy: 1) cancellation requested on or before December 10, 2021, will receive 75% of the registration fee; (2) cancellation requested December 11, 2021, through February 21, 2022, will receive 50% of the registration fee; (3) after February 21, 2022, no refunds. A \$150 service fee applies to each cancelled registration.

Conference Venue and Hotels

Located just two miles from Palm Springs International Airport, the Convention Center and the adjacent Renaissance Palm Springs Hotel offer expansive, contiguous meeting and exhibit space, all on one level and under one roof. From the Conference registration area, there is an incredible view of the mountains that lie just minutes away under clear blue skies.

The Palm Springs Convention Center participates in a comprehensive environmental program designed to utilize best practices in water conservation, energy efficiency, waste diversion, and air quality. The in-house catering partner, Savoury's, utilizes biodegradable products, locally grown food, and donates excess food to local assistance programs. It also participates in the City of Palm Springs' pilot composting program.

Hotels. Links to online reservations for both hotels will be available on the Conference website on the **Venue & Hotels** page by June 30, 2021. Be sure to obtain a registration confirmation number and to inquire about the hotel's cancellation and early check-out policies.

	Renaissance Palm Springs	Hilton Palm Springs
Address	888 East Tahquitz Canyon Way (connected to Convention Center)	400 East Tahquitz Canyon Way (1 block away from Convention Center)
Group Rate	\$219/night + tax (single)	\$215/night + tax* (single or double) *requires one night room/tax
<small>A percentage of rooms will be available at the prevailing U.S. Government per diem rate (plus tax) for U.S. federal, state, and local government employees. Government ID will be required at check-in.</small>		

The Chlorinated Conference does not have group rate agreements with any properties other than the Renaissance Palm Springs and the Hilton Palm Springs nor have we partnered with any travel agency or third-party for travel or hotel discounts. If you receive a call or an email offering assistance in making or changing hotel reservations, we advise caution. The Chlorinated Conference has no agreement with any organization to contact participants and offer reservation assistance, nor have we provided contact information to anyone for this purpose.

Palm Springs and Surroundings





Palm Springs and Surroundings

Within easy walking distance of the Convention Center, you will find restaurants, shops, and attractions. Village Fest, a street fair, is held downtown every Thursday evening. Stop by the Palm Springs Art Museum or the Architecture and Design Center, admission is free on Thursdays from 4:00-8:00 p.m. The downtown area displays the mid-century modern architecture the city is famous for, and the street names recall its beginnings as a getaway spot for the stars of Old Hollywood.

Just minutes from downtown, you can take the Palm Springs Aerial Tramway 2,643 feet up to Mount St. Jacinto State Park, where extensive hiking trails branch out in all directions. Explore the terrain of the Greater Palm Springs area by bike, Jeep, or hot air balloon. Visit Joshua Tree National Park, where two distinct desert ecosystems—the Mojave and the Colorado—come together, and the canyons of the San Andreas Fault await you.

visitgreaterpalmsprings.com

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It can be done